

CLAIMS

- 1. A light emitting display device comprising:**
a gate electrode provided formed over a substrate having an insulating surface
5 with a substance having a photocatalytic function therebetween;
a gate insulating layer formed over the gate electrode;
a semiconductor layer and a first electrode formed over the gate insulating
layer;
a wiring layer formed over the semiconductor layer;
10 a partition wall covering an edge portion of the first electrode and the wiring
layer;
an electroluminescent layer over the first electrode; and
a second electrode over the electroluminescent layer,
wherein the wiring layer covers the edge portion of the first electrode.
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2. A light emitting display device comprising:
a wiring layer and a first electrode formed over a substrate having an insulating
surface with a substance having a photocatalytic function therebetween;
a semiconductor layer formed over the wiring layer;
20 a gate insulating layer formed over the semiconductor layer;
a gate electrode formed over the gate insulating layer;
a partition wall covering an edge portion of the first electrode and the wiring
layer;
an electroluminescent layer over the first electrode; and
25 a second electrode over the electroluminescent layer,
wherein the wiring layer covers the edge portion of the first electrode.
- 3. A light emitting display device comprising:**
a gate electrode formed over a substrate having an insulating surface with a
30 substance having a photocatalytic function therebetween;

a gate insulating layer formed over the gate electrode;
a semiconductor layer and a first electrode formed over the gate insulating layer;
a wiring layer formed over the semiconductor layer;
5 a partition wall covering an edge portion of the first electrode and the wiring layer;
an electroluminescent layer over the first electrode; and
a second electrode over the electroluminescent layer,
wherein the first electrode covers an edge portion of the wiring layer.

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4. A light emitting display device comprising:

a wiring layer and a first electrode formed over a substrate having an insulating surface with a substance having a photocatalytic function therebetween;
a semiconductor layer formed over the wiring layer;
15 a gate insulating layer formed over the semiconductor layer;
a gate electrode formed over the gate insulating layer;
a partition wall covering an edge portion of the first electrode and the wiring layer;
an electroluminescent layer over the first electrode; and
20 a second electrode over the electroluminescent layer,
wherein the first electrode covers an edge portion of the wiring layer.

5. A light emitting display device according to any one of claims 1 to 4,
wherein the substance having a photocatalytic function comprises titanium oxide.

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6. A light emitting display device comprising:

a conductive layer including a refractory metal over a substrate having an insulating surface;
a gate electrode formed over the conductive layer;
30 a gate insulating layer formed over the gate electrode;

a semiconductor layer and a first electrode formed over the gate insulating layer;

a wiring layer formed over the semiconductor layer;

a partition wall covering an edge portion of the first electrode and the wiring 5 layer;

an electroluminescent layer over the first electrode; and

a second electrode over the electroluminescent layer,

wherein the wiring layer covers the edge portion of the first electrode.

10 7. A light emitting display device comprising:

a conductive layer including a refractory metal over a substrate having an insulating surface;

a wiring layer and a first electrode formed over the conductive layer;

a semiconductor layer formed over the wiring layer;

15 a gate insulating layer formed over the semiconductor layer;

a gate electrode formed over the gate insulating layer;

a partition wall covering an edge portion of the first electrode and the wiring layer;

an electroluminescent layer over the first electrode; and

20 a second electrode over the electroluminescent layer,

wherein the wiring layer covers the edge portion of the first electrode.

8. A light emitting display device comprising:

a conductive layer including a refractory metal over a substrate having an 25 insulating surface;

a gate electrode formed over the conductive layer;

a gate insulating layer formed over the gate electrode;

a semiconductor layer and a first electrode formed over the gate insulating layer;

30 a wiring layer formed over the semiconductor layer;

a partition wall covering an edge portion of the first electrode and the wiring layer;

an electroluminescent layer over the first electrode; and

a second electrode over the electroluminescent layer,

5 wherein the first electrode covers an edge portion of the wiring layer.

9. A light emitting display device comprising:

a conductive layer including a refractory metal over a substrate having an insulating surface;

10 a wiring layer and a first electrode formed over the conductive layer;

a semiconductor layer formed over the wiring layer;

a gate insulating layer formed over the semiconductor layer;

a gate electrode formed over the gate insulating layer;

15 a partition wall covering an edge portion of the first electrode and the wiring layer;

an electroluminescent layer over the first electrode; and

a second electrode over the electroluminescent layer,

wherein the first electrode covers an edge portion of the wiring layer.

20 10. A light emitting display device according to any one of claims 6 to 9, wherein the refractory metal is selected from the group consisting of Ti (titanium), W (tungsten), Cr (chromium), Al (aluminum), Ta (tantalum), Ni (nickel), Zr (zirconium), Hf (hafnium), V (vanadium), Ir (iridium), Nb (niobium), Pd (lead), Pt (platinum), Mo (molybdenum), Co (cobalt), and Rh (rhodium).

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11. A light emitting display device according to any one of claims 1-4 and 6-9, wherein the gate electrode and the wiring layer are made of a material selected from the group consisting of silver, gold, copper, and indium tin oxide.

30 12. A light emitting display device according to any one of claims 1-4 and

6-9, wherein the semiconductor layer is a semi-amorphous semiconductor containing hydrogen and halogen and having a crystal structure.

13. A TV set including a display screen having the light emitting display device according to any one of claims 1-4 and 6-9.

14. A method for manufacturing a light emitting display device, comprising: forming a gate electrode over a substrate having an insulating surface with a substance having a photocatalytic function therebetween by a droplet discharge method;

10 forming a gate insulating layer over the gate electrode;

forming a semiconductor layer over the gate insulating layer;

15 forming a first electrode over the gate insulating layer by a droplet discharge method;

forming a wiring layer over the semiconductor layer by a droplet discharge

method to cover an edge of the first electrode;

15 forming a partition wall to cover the edge portion of the first electrode and the wiring layer;

forming an electroluminescent layer over the first electrode; and

20 forming a second electrode over the electroluminescent layer by a droplet discharge method.

15. A method for manufacturing a light emitting display device, comprising:

forming a first electrode over a substrate having an insulating surface with a substance having a photocatalytic function therebetween by a droplet discharge method;

25 forming a wiring layer over the substrate having an insulating surface with a substance having a photocatalytic function therebetween to cover an edge portion of the first electrode;

forming a semiconductor layer over the wiring layer;

forming a gate insulating layer over the semiconductor layer;

30 forming a gate electrode over the gate insulating layer by a droplet discharge

method;

forming a partition wall to cover the edge portion of the first electrode and the wiring layer;

forming an electroluminescent layer over the first electrode; and

5 forming a second electrode over the electroluminescent layer by a droplet discharge method.

16. A method for manufacturing a light emitting display device, comprising:

10 forming a gate electrode over a substrate having an insulating surface with a substance having a photocatalytic function therebetween by a droplet discharge method;

forming a gate insulating layer over the gate electrode;

forming a semiconductor layer over the gate insulating layer;

15 forming a wiring layer over the semiconductor layer by a droplet discharge method;

forming a first electrode over the gate insulating layer by a droplet discharge method to cover an edge portion of the wiring layer;

forming a partition wall to cover an edge portion of the first electrode and the wiring layer;

forming an electroluminescent layer over the first electrode; and

20 forming a second electrode over the electroluminescent layer by a droplet discharge method.

17. A method for manufacturing a light emitting display device, comprising:

25 forming a wiring layer over a substrate having an insulating surface with a substance having a photocatalytic function therebetween by a droplet discharge method;

forming a first electrode over the substrate having an insulating surface with a substance having a photocatalytic function therebetween by a droplet discharge method to cover an edge portion of the wiring layer;

forming a semiconductor layer over the wiring layer;

30 forming a gate insulating layer over the semiconductor layer;

forming a gate electrode over the gate insulating layer by a droplet discharge method;

forming a partition wall to cover an edge portion of the first electrode and the wiring layer;

5 forming an electroluminescent layer over the first electrode; and

forming a second electrode over the electroluminescent layer by a droplet discharge method.

18. A method for manufacturing a light emitting display device according to
10 any one of claims 14 to 17, wherein titanium oxide is used as the substance having a photocatalytic function.

19. A method for manufacturing a light emitting display device, comprising:
forming a conductive layer including a refractory metal over a substrate having

15 an insulating surface;

forming a gate electrode over the conductive layer by a droplet discharge method;

forming a gate insulating layer over the gate electrode;

forming a semiconductor layer over the gate insulating layer;

20 forming a first electrode over the gate insulating layer by a droplet discharge method;

forming a wiring layer over the semiconductor layer by a droplet discharge method to cover an edge portion of the first electrode;

25 forming a partition wall to cover the edge portion of the first electrode and the wiring layer;

forming an electroluminescent layer over the first electrode; and

forming a second electrode over the electroluminescent layer by a droplet discharge method.

20. A method for manufacturing a light emitting display device, comprising:
forming a conductive layer including a refractory metal over a substrate having
an insulating surface;
forming a first electrode over the conductive layer by a droplet discharge
5 method;
forming a wiring layer over the conductive layer by a droplet discharge method
to cover an edge portion of the first electrode;
forming a semiconductor layer over the wiring layer;
forming a gate insulating layer over the semiconductor layer;
10 forming a gate electrode over the gate insulating layer by a droplet discharge
method;
forming a partition wall to cover the edge portion of the first electrode and the
wiring layer;
forming an electroluminescent layer over the first electrode; and
15 forming a second electrode over the electroluminescent layer by a droplet
discharge method.

21. A method for manufacturing a light emitting display device, comprising:
forming a conductive layer including a refractory metal over a substrate having
20 an insulating surface;
forming a gate electrode over the conductive layer by a droplet discharge
method;
forming a gate insulating layer over the gate electrode;
forming a semiconductor layer over the gate insulating layer;
25 forming a wiring layer over the semiconductor layer by a droplet discharge
method;
forming a first electrode over the gate insulating layer by a droplet discharge
method to cover an edge portion of the wiring layer;
forming a partition wall to cover an edge portion of the first electrode and the
30 wiring layer;

forming an electroluminescent layer over the first electrode; and
forming a second electrode over the electroluminescent layer by a droplet discharge method.

5 22. A method for manufacturing a light emitting display device, comprising:
 forming a conductive layer including a refractory metal over a substrate having an insulating surface;

 forming a wiring layer over the conductive layer by a droplet discharge method;

10 forming a first electrode over the conductive layer by a droplet discharge method to cover an edge portion of the wiring layer;

 forming a semiconductor layer over the wiring layer;

 forming a gate insulating layer over the semiconductor layer;

15 forming a gate electrode over the gate insulating layer by a droplet discharge method;

 forming a partition wall to cover an edge portion of the first electrode and the wiring layer;

 forming an electroluminescent layer over the first electrode; and

20 forming a second electrode over the electroluminescent layer by a droplet discharge method.

23. A method for manufacturing a light emitting display device according to any one of claims 19 to 22, wherein the refractory metal is selected from the group consisting of Ti (titanium), W (tungsten), Cr (chromium), Al (aluminum), Ta (tantalum),
25 Ni (nickel), Zr (zirconium), Hf (hafnium), V (vanadium), Ir (iridium), Nb (niobium), Pd (lead), Pt (platinum), Mo (molybdenum), Co (cobalt), and Rh (rhodium).

24. A method for manufacturing a light emitting display device according to any one of claims 14 to 22, wherein the gate electrode and the wiring layer are formed
30 by using a material selected from the group consisting of silver, gold, copper, and

indium tin oxide.

25. A method for manufacturing a light emitting display device according to any one of claims 14 to 22, wherein the semiconductor layer is formed by using a
5 semi-amorphous semiconductor containing hydrogen and halogen and having a crystal structure.